Creating an Internet-Based Commons for Engineering Education in West Africa
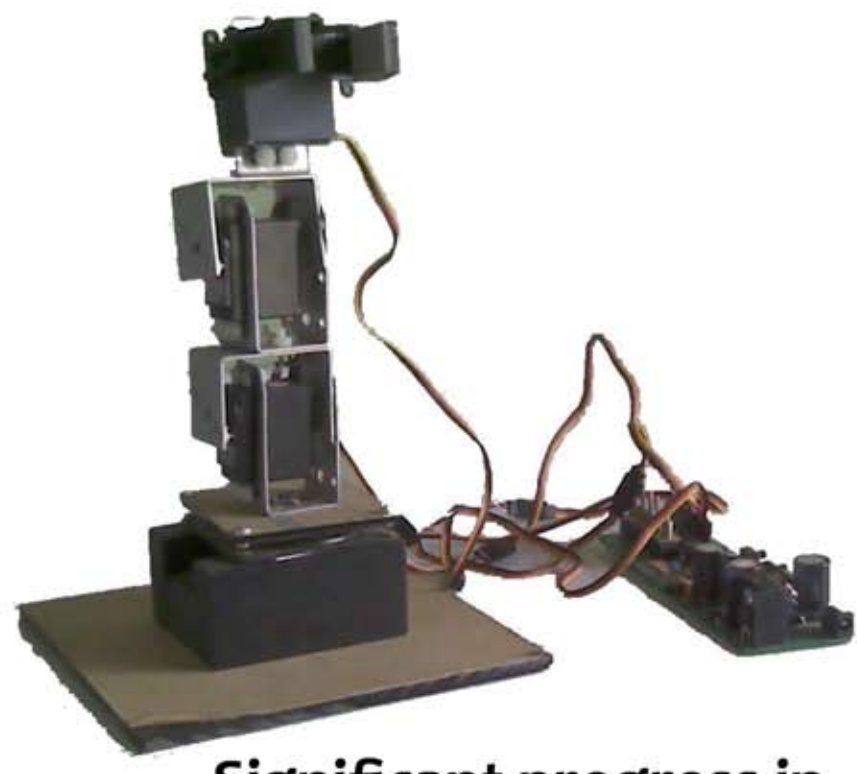
Progress to Date

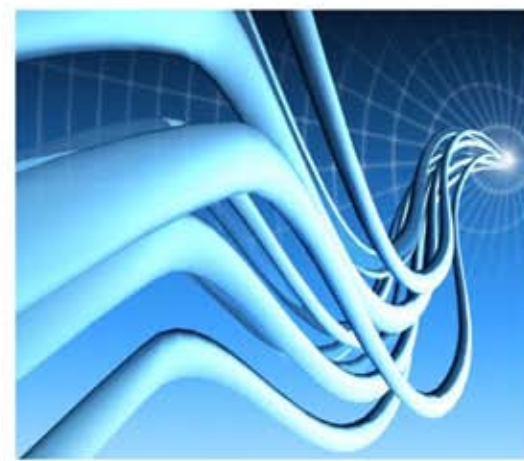Ovtober 2009 → ← Present

Obafemi Awolowo University
Ile-Ife, Nigeria

Largest academic computer network in Nigeria

First university outside of MIT to develop an iLab

Significant progress in integrating iLabs into curriculum
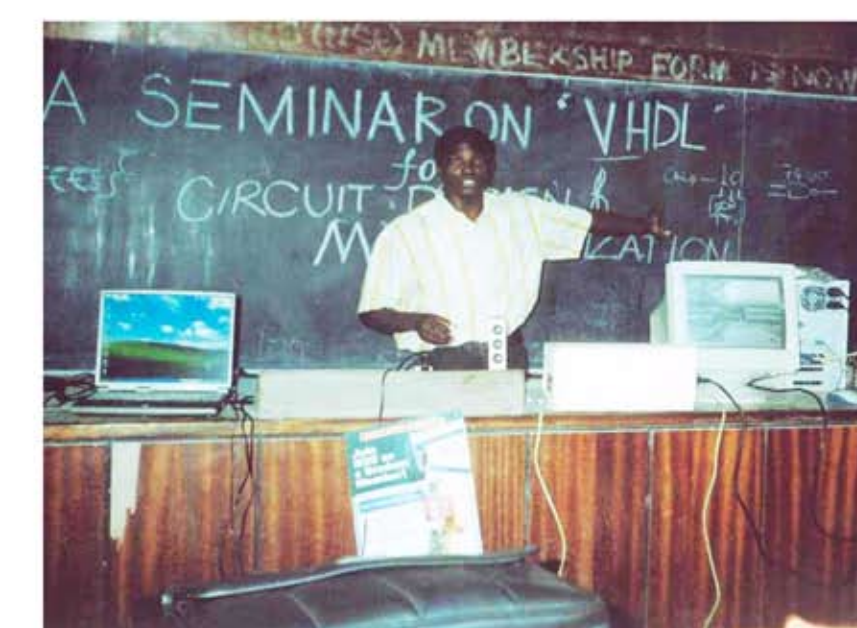
Campus-wide fiber-optic backbone for computer network

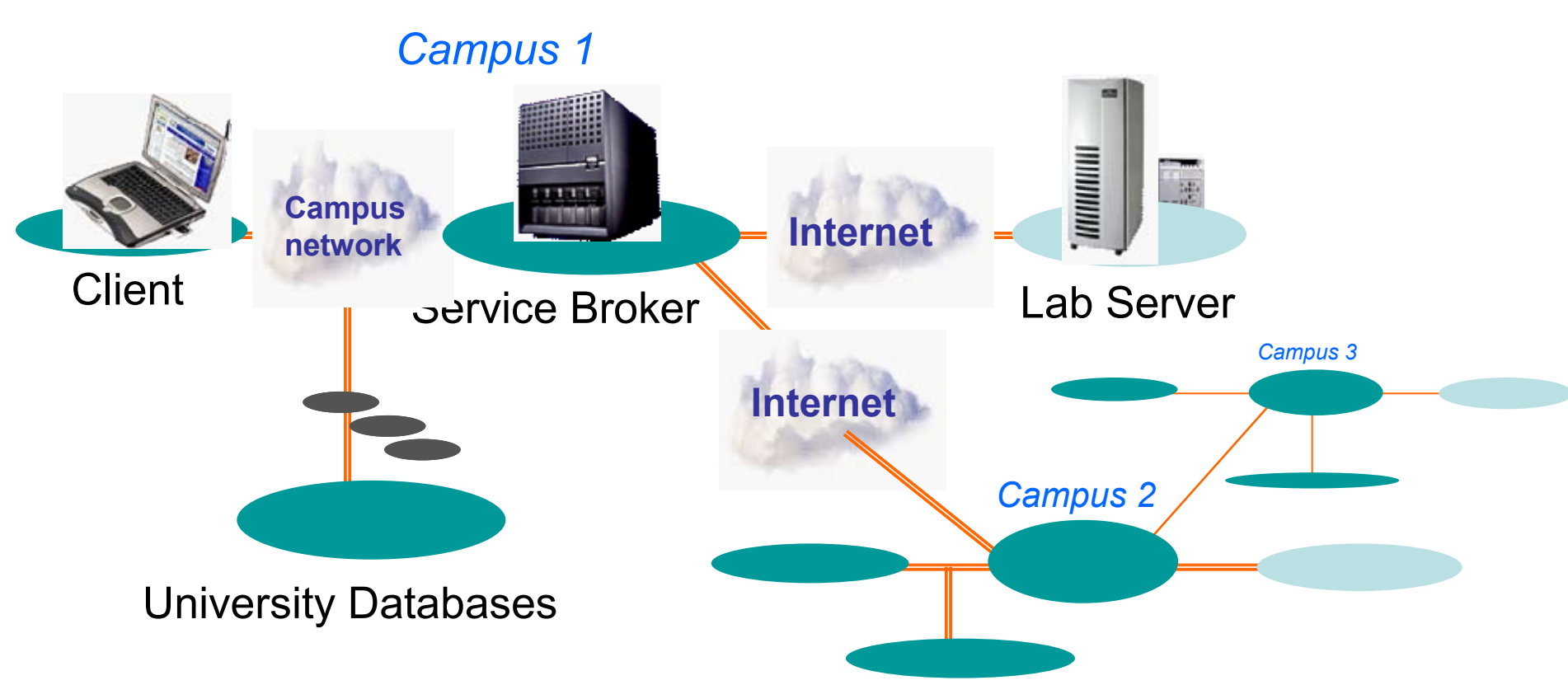#### iLab Shared Architecture

Campus 1

Client
Campus network
Service Broker
Internet
Lab Server
Campus 3
Internet
University Databases
Campus 2

Ghana Telecom University College

Milestones

- GTUC has the largest bandwidth among all the educational institutions in Ghana
- Commitment from Vodafone (Ghana) to make GTUC internet gateway for education in Ghana (an educational ISP)
- Commitment from Government to create a common model to include all Training Colleges
- Commitment from Government on a policy/framework for promoting and streamlining Virtual Education in Ghana
- Commitment from all the ten Polytechnics across the country to build a common platform
- Commitment by the private Universities in Ghana to the shared commons idea on Tertiary Education

Group Meetings

- iLabs are real laboratories that are accessed through the Internet from anywhere at any time.
- The iLab architecture allows schools and universities to build out an extensible network of labs that can all be shared between institutions.
- The system couples together like LEGOs.
- An institution can contribute labs, curriculum modules, visualizations, evaluations or best practices.
- All software is available on an open source basis.
- iLab Africa, sponsored by the Carnegie Corporation, is a partnership between MIT, OAU, Makerere University in Uganda, and the University of Dar es Salaam, to build and share iLabs together.
  - Based on staff and student exchanges as well as shared iLabs.
  - The national University of Rwanda, Kigali Institute of Science and Technology, and GTUC are eager to join the iLab-Africa network
- Based on recent meetings, Vodafone Ghana has offered to run fiber to GTUC increasing its network bandwidth > 100 Mbs.

Massachusetts Institute of Technology

- The frontiers of knowledge and technology now stretch around the globe, and in this new environment, MIT continues to lead, serving at the cutting edge of global research and teaching. No other technical university in the world has such a powerful, coherent array of international opportunities due to its considerable existing strength in the sciences, management and engineering.
- A remarkably diverse set of mechanisms for applied international learning and international technology transfers have evolved at MIT. These include:
  - MISTI — Currently the largest set of opportunities for students to combine global learning with on-campus activities, MISTI was created to ensure that MIT students and faculty have the necessary tools and background to identify, understand and acquire knowledge for technology leadership in all parts of the world through international internships and exchanges.
  - AITI - MIT's Africa Information Technology Initiative sends student instructors to Africa to hold courses at African universities on mobile technologies, transfer curriculum to permanent courses at these universities, and awaken African students to the commercial possibilities of the technologies.
  - The iLab Project provides technology and incentives to share laboratories between universities across the globe. iLabs have been implemented in the US, China, Australia, Europe, as well as in three sub-Saharan African universities.
  - MIT and the Singaporean government have established multiple joint research projects involving the exchange of faculty and graduate students in areas as diverse as infectious disease, environmental sensing and modeling, and planning for future urban mobility

iLabs Around the World

Proposed Future Goals

2010   2012 → ← 2012   2015

Cadre of Global Technologists

- Education Technology Initiatives:
  o Since 1997, specially-trained MIT students have been working with rural universities and secondary schools in China on open courseware (OCW) projects. MIT students collaborate with faculty and students in China to incorporate OCW materials into the Chinese university curriculum.
  o Areas of instruction are as diverse as: web design, programming, robotics, electrical engineering, development, civil engineering, biology, aerospace engineering, and more.
  o This model will be explored as a possible method of information transfer from MIT to OAU, GTUC, and underserved areas of West Africa.
  o As in the China model, MISTI students would work closely with African faculty to understand the relevant OCW/iLabs material, identify the sections of material that could be used in each teacher's course, and do a series of demonstration classes, assisting the African faculty in using the MIT resources to teach the material successfully.
- Africa Information Technology Initiative
- Seed Funds: a vital part of the MIT strategy to internationalize research and education, seed funds are available to MIT faculty and researchers to support early-stage international projects and research collaboration.
  o Through the Global Seed Fund pool, MIT faculty and their international collaborators can receive up to $30,000 per project for research proposals that focus on innovative research and equal collaboration across borders.
  o The program has received grants proposals from across the African continent and looks forward to increased proposal volume as MIT researchers' and their African university counterparts' interactions continue to grow and strengthen

The Shared Commons — Open University of West Africa

Ghana Schools

Local Gateway

Other Schools

The Commons Real Estate

e-LIBRARY
iLab
OCW
LEARNING MGMT SYSTEM
VIRTUAL FACLTY

Nigeria Schools

Local Gateway

Local Gateway

The Master Gateway

The Model

WORLD-CLASS FACULTY
ACTUAL LOCATION: MIT, USA
(STAGE 2: 2012-2014)

LIBRARY
ACTUAL LOCATION: GTUC, GHANA
(STAGE 2: 2012-2014)

STUDENT
LOCATION: HEART OF WEST AFRICA

ROBOTIC ARM
ACTUAL LOCATION: OAU, ILE-IFE
(STAGE 1: 2010-2011)